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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,784	08/04/2006	Massimo Malavasi	108907-00043	3967

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EXAMINER	
LAUX, DAVID J	

ART UNIT	PAPER NUMBER
4193	

NOTIFICATION DATE	DELIVERY MODE
01/15/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DCIPDocket@arentfox.com
IPMatters@arentfox.com
Patent_Mail@arentfox.com

Office Action Summary	Application No.	Applicant(s)	
	10/553,784	MALAVASI ET AL.	
	Examiner	Art Unit	
	David Laux	4193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 October 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/21/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the submitted drawing fails to disclose sufficient detail to enable one skilled in the art to understand the invention. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the invention in sufficient detail as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after

the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 14-28 are objected to because of the following informalities: The preamble of the claims should be changed to read "An apparatus" or "A system" instead of "Plant" to be more consistent with US claim terminology. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 8-9 & 19-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims refer to modulating the pressure of the reaction vessel in dependence of the type of material being treated, but the specification fails to make reference to the type of means that could be used to adjust the pressure (i.e., whether the pressure is adjusted manually or through the use of a control) or a means for

determining whether the pressure needs to be increased or decreased. The specification makes reference to a blower (30) used to pressurize the vessel, but without a seal or some device to create a back pressure, the air within the vessel would maintain only a slight positive pressure since the exhaust would leave through the exhaust duct (25) at the same rate at which it was being introduced by the blower. Appropriate action is required.

6. Claims 22-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. With respect to claim 22, the specification does not adequately describe a "propulsion chamber" or how it would be used to supplying solid material pieces into the reactor. Appropriate action is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 8-9 & 19-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A means for modulating the pressure of the reaction vessel has not been adequately enabled, per discussion above. Appropriate action is required.

9. Claims 22-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A "propulsion chamber" has not been adequately enabled, per discussion above. Appropriate action is required.

Claim Rejections - 35 USC § 102

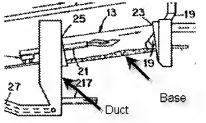
10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 5, 10-11, 14-15, 21 & 28 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by US 4,925,389 to DeCicco et al.

12. '389 discloses a plant for the treatment of waste materials comprising a combustion reactor (13) to which the material to be treated can be supplied (Col. 2, lines 61-63) and which includes an input for a combustion supporter comprising oxygen (Col. 3, lines 6-14) and an output (35) for the gases produced during the combustion of the material inside the reactor (13), characterized in that the combustion reactor (13) is substantially isothermic or quasi- isothermic in use at high or very high temperature (Col. 10, lines 26-28), and without substantial oxygen deficit, in all of its parts (Col. 3, lines 6-14), wherein the walls of the reactor comprise a ceramic lining material (Col. 7, lines 23-27); further comprising a means for cooling the gases produced during combustion (43; Col. 9, lines 20-24); further comprising a plurality of feeders (11, 17) for supplying different materials to the reactor (13) (Col. 3, lines 23-26); further comprising

a base portion (see Fig. 1 reproduced in part below) communicating with and inclined towards a duct (see Fig. 1 reproduced in part below), wherein the collecting duct communicates with a container (27) for collecting the liquid slag which is cooled rapidly in a water bath (Col. 10, lines 51-55).



Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 2-4, 6-7, 12-13, 16-17 & 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over '389 in view of US 6,848,375 to Kasin. '389 fails to disclose a method wherein the supply of a combustion supporter comprising oxygen is mixed with gases resulting from the combustion, with water, or with a combination of gases and water, wherein the recirculation gases resulting from combustion are supplied at minimized flow-rate and/or temperature, wherein the mixing of the oxygen with the combustion fumes takes place with a concentration of the latter of more than 10% by volume and preferably more than 60% by volume, wherein the recirculation gases which ensure the thermal balance of a plant that is operated continuously by removing the

excess reaction heat owing to an appreciable heat difference between the input and the output of the reactor are recycled at the minimum temperature that is compatible with normal cooling means and preferably just above the dew point, wherein the recycling gases which ensure the thermal balance are constituted wholly or partially by steam, wherein the method comprises a MIMO control and optimization procedure which is focused on the parameters at the output of the reactor and in particular on the measurement of data relating to the composition of the gases at the output of the reactor, wherein the measurements of the gas-composition data are implemented with characteristic response times of about 2 seconds; and an apparatus comprising a means for cooling the gases produced during combustion, means for withdrawing and recycling a portion of the said cooled gases being provided for mixing the oxygen at the input to the reactor and producing a combustion-supporting mixture which is opaque to infra-red, wherein the cooling means comprises a means for recovering energy by giving-up of heat by gases output from the reactor, further comprising a sensor means for measuring output parameters of the reactor, a control and management system receiving the signals of the sensor means.

15. '375 teaches a method wherein the supply of a combustion supporter comprising oxygen is mixed with gases resulting from the combustion (Col. 5, lines 49-52), wherein the recirculation gases resulting from combustion are supplied at minimized temperature (Col. 4, lines 38-40), wherein the mixing of the oxygen with the combustion fumes takes place with a concentration of the latter of more than 10% by volume and preferably more than 60% by volume (Col. 8, lines 48-54), wherein the recirculation

gases which ensure the thermal balance of a plant that is operated continuously by removing the excess reaction heat owing to an appreciable heat difference between the input and the output of the reactor are recycled at the minimum temperature that is compatible with normal cooling means (Col. 4, lines 38-40), wherein the recycling gases which ensure the thermal balance are constituted wholly or partially by steam (it would be inherent that the recycled combustion gases would contain steam since steam is a by-product of the combustion process), wherein the method comprises a MIMO control and optimization procedure which is focused on the parameters at the output of the reactor and in particular on the measurement of data relating to the composition of the gases at the output of the reactor (Col. 12, lines 14-20), wherein the measurements of the gas-composition data are implemented with characteristic response times of about 2 seconds (Col. 12, lines 16-18 discloses continuous response times); and an apparatus comprising a means for cooling the gases produced during combustion (71), means for withdrawing and recycling a portion of the said cooled gases (55) being provided for mixing the oxygen at the input to the reactor and producing a combustion-supporting mixture which is opaque to infra-red (Col. 7, lines 44-47), wherein the cooling means (71) comprises a means for recovering energy by giving-up of heat by gases output from the reactor (Col. 7, lines 48-50), further comprising a sensor means for measuring output parameters of the reactor (Col. 12, lines 14-20), a control and management system receiving the signals of the sensor means (Col. 12, lines 14-20).

16. Thus, it would have been obvious to one skilled in the art at the time of invention to combine the apparatus of '389 with flue gas recirculation and control system of '375

because such a combination would have produced the added benefit of a furnace with an automated pollution control system to reduce nitrous oxide emissions.

17. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over '389 in view of '375, as applied to claim 16 above, and further in view of US 6,883,443 to Rettig et al. '389 in view of '375 does not disclose a means for mixing a portion of the recycled gases with the gases output from the reactor prior to their entry into the cooling means. '443 teaches a means for mixing a portion of the recycled gases with the gases output from the reactor prior to their entry into the cooling means (Col. 5, line 65 – Col. 6, line 15). It would have been obvious to one skilled in the art at the time of invention to combine the apparatus of '389 in view of '375 with the cooled flue gas recirculation system of '443 because such a combination would have produced the added benefit of a cooler and more diluted flue gas which can be more efficiently cleaned.

18. Claims 8-9 & 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over '389 in view of US 5,199,356 to Hoffert. '389 does not disclose a pressurized reaction vessel with a means for maintaining a pressure greater than atmospheric pressure inside the reactor in use or with a means for selectively modulating the pressure inside the vessel substantially from atmospheric pressure to a pressure greater than atmospheric pressure, in dependence on the type of material supplied into the reactor. '356 teaches a pressurized reaction vessel (19) with a means for maintaining a pressure greater than atmospheric pressure (21) inside the reactor (19) in use (Col. 3, lines 54-55) and with a means for selectively modulating the pressure inside the vessel substantially from atmospheric pressure to a pressure greater than

atmospheric pressure, in dependence on the type of material supplied into the reactor (it would be inherent that the pressure inside the reaction vessel could be varied depending on the type of input since the reaction vessel (19) is pressurized through the use of an air compressor which can vary the pressure of its exhaust). It would have been obvious to one skilled in the art at the time of invention to combine the apparatus of '389 with the pressurized reaction vessel of '356 because such a combination would have produced the added benefit of a more even and efficient distribution of primary air within the reaction chamber and a pressurized exhaust gas.

19. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over '389 in view of US 5,320,050 to Ishida et al. '389 does not disclose a collecting duct with a heating means for keeping the slag fluid. '050 teaches a collecting duct (206) with a heating means (213) for keeping the slag fluid. It would have been obvious to one skilled in the art at the time of invention to combine the apparatus of '389 with the heated slag discharge duct of '050 because such a combination would have the added benefit of preventing slag build-up within the discharge duct.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Laux whose telephone number is (571) 270-7619. The examiner can normally be reached on M-R 7:30-5, F 7:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derris Banks can be reached on (571) 272-4419. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. L./
Examiner, Art Unit 4193

/Derris H Banks/
Supervisory Patent Examiner, Art Unit 3725

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